CBP Cross Bracing Protocol

PATIENT INFORMATION BOOKLET

A Booklet Designed for ACL Injured Patient's Considering the Cross Bracing Protocol (CBP)

www.HealACL.com

Image of Dr Tom Cross, Clarissa Lewis (Patient #880), and Riley Gibson

About the CBP.

Image of Dr Merv Cross (seated), with son Dr Tom Cross (left), and grandson Dr Matt Dowsett (right) holding a knee brace used in the Cross Bracing Protocol. Image taken by Wolter Peeters Photography (2023).

The Cross Bracing Protocol (CBP), founded and pioneered in 2014 by Dr. Mervyn Cross and Dr. Tom Cross as part of the 'ACL-Heal Research Project,' offers a novel non-surgical approach to managing acute anterior cruciate ligament (ACL) injuries. This innovative protocol challenges the long-standing belief that ACL ruptures are incapable of healing, instead proposing that they can heal similarly to bony fractures provided they are treated within a critical treatment window of 4-10 days. As such, the CBP aims to achieve a 'closed reduction,' of the ruptured ACL within the critical treatment window, before involution of the ACL occurs.

The CBP team's view is that there is a 'spectrum of ACL injuries,' from mild to severe based on both imaging and clinical features, and an associated 'spectrum of ACL healing,' following treatment. This ideology has led to the ongoing development of a novel MRI acute ACL injury classification system using the MRI ACL injury classification or 'ACL pattern of injury' to aid clinical decision-making regarding the suitability of this treatment option, or referral to surgery. This is analogous to the clinical and radiological triage of a bony fracture.

'Patient factors,' and 'MRI factors,' based on the above enables an informed 'shared decision consultation,' with the patient for clinical decisions to be made such as suitability to adopt non-surgical treatment options such as rehabilitation alone, bracing 30-90 degrees, the adoption of the CBP, or referral to surgery. If the patient is deemed to be suitable for the CBP, combining CBP with rehabilitation enhances healing compared to rehabilitation alone, though not all injuries (the more severely injured ACL patterns of injury) will achieve 'high-volume,' ACL healing and this needs to be thoroughly discussed with the patient at the initial consultation.

Despite the promising potential of this novel treatment, many ACL injuries may still require surgical intervention. High velocity sports such as skiing fast, side-stepping at speed in football, suffering a landing error in netball, and so many more, often result in more severe or rather profound ACL injuries. Athletes may still require surgery for those aiming to return to such high-demand ACL sports, highlighting the importance of accurate MRI -based classification to support clinical decision-making. Long term outcomes, including the development of osteoarthritis and the survivorship of the healed ACL after adoption of the CBP, remain key areas of ongoing research.

The CBP represents a paradigm shift in ACL injury management, emphasising early accurate clinical and MRI diagnosis, a thorough shared decision initial consultation with the patient and then the adoption of a non-surgical or surgical management approach. While not suitable for all cases, the CBP has been adopted by over 1,000 patients as of 2025. The CBP provides another non-surgical initial management alternative to surgery for selected patients and this research has arguably contributed to a deeper understanding of ACL healing dynamics.

The ACL and Injury.

WHAT IS THE ACL?

The anterior cruciate ligament (ACL) is a dense connective tissue located in the knee joint, connecting the femur to the tibia. The ACL prevents the tibia from sliding forward and more importantly controls rotational movements, and contributes to joint stability and proprioception during activities like running and pivoting. Made primarily of Type I collagen, fibroblasts, proteoglycans, and water, the ACL is surrounded by a synovial sheath for nourishment and lubrication.

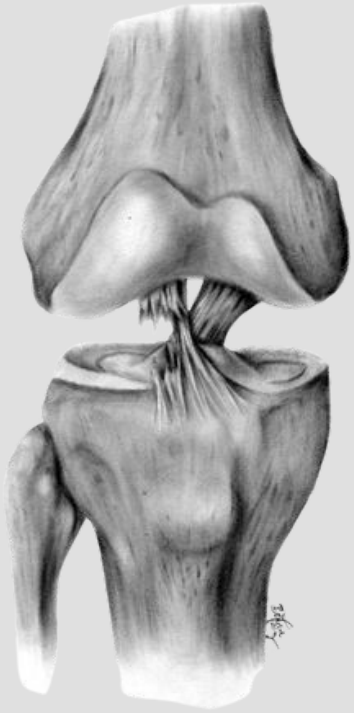


Diagram of a torn ACL created by artist Bonnie Tang.

WHAT ACTUALLY HAPPENS WHEN YOU HURT YOUR ACL?

When you injure your ACL, the ligament tears partially or completely, often accompanied by a 'pop' sound or 'giving way' sensation. This results in a variable degree of bleeding into the knee joint (haemarthrosis), pain and a feeling of knee instability.

The acutely injured knee may feel unstable with a reduced range of motion and reflexive muscle inhibition, particularly in the quadriceps and hamstrings. In severe cases, associated with greater force at the time of injury, concomitant injuries, such as meniscus tears, bone bruises, or collateral ligament/capsular disruptions, may also occur.

WHAT ARE SOME ACL RISK FACTORS, AND HOW IS THE ACL HURT?

With approximately 6-8 million ACL injuries occurring globally each year ACL researchers are investigating the multiple risk factors for ACL injury. There are many risk factors including but not limited to genetics and collagen type, hypermobility, lower limb joint alignment, gender, muscle imbalances, poor footwear, poor neuromuscular control, poor playing surfaces, sports and activities adopted and the style of play.

High-risk sports, like skiing, soccer, touch football, all football codes, netball and basketball are commonly associated with ACL tears, often due to sudden deceleration, rapid changes in direction, or improper landing mechanics from jumps and catching an edge skiing. Injuries can also occur from direct contact, like a blow to the knee or an awkward impact during a collision. Non-contact injuries, however, are more prevalent and are typically caused by movements that involve sudden stops, pivots, or hyperextension of the knee.

HOW DO I KNOW HOW BAD MY KNEE INJURY IS?

The CBP view ACL injuries as a spectrum from mild to severe (see the diagram on page 3) and is hypothesised to be directly related to the force enacted on the knee at the time of injury. Severity of injury is based on both clinical and imaging findings. The novel acute ACL injury classification system designed by the CBP team, uses your MRI to assess the severity of injury and to guide clinical decision regarding the suitability of this treatment option. The classification of your injury from your MRI will account for how badly disrupted the native ACL anatomy is to determine if it can potentially be restored by adoption of the CBP.

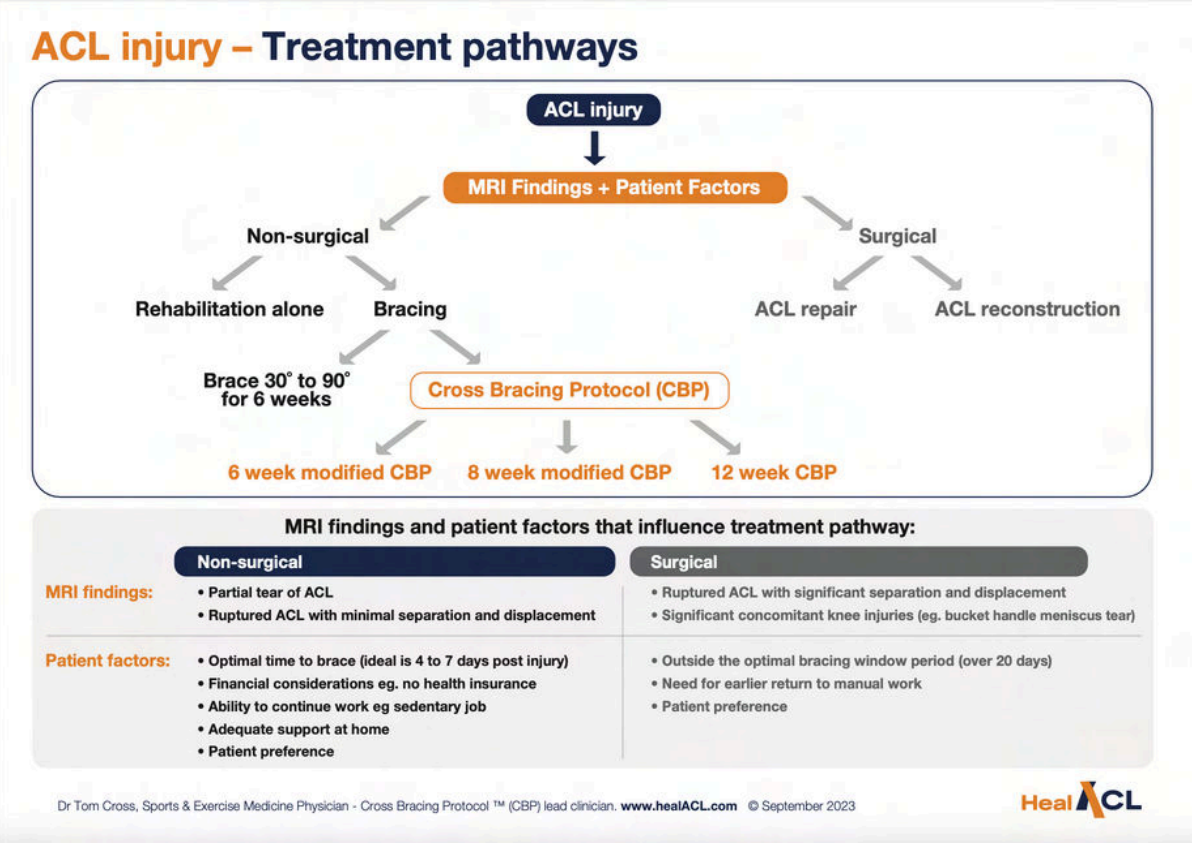
The ACL and Injury.

WHAT CAN I EXPECT WHEN I HURT MY ACL & IMMEDIATE MANAGEMENT STEPS

When you hurt your ACL, it is crucial to stop any physical activity immediately to prevent further knee instability and further damage to the ACL and other tissues within the knee. A clinical examination by a healthcare professional in the days following an ACL injury may include a Lachman's test, but repeated testing should be avoided, as this can further injure the ACL once it may have started the healing process in the days and weeks after injury. If imaging is required, your doctor will likely recommend X rays to rule out fractures and then if there is still concern for ACL and other soft tissue injuries, an MRI will be recommended. Based on a thorough clinical and radiological assessment your treating doctor will have 'shared decision making consultation' with you and discuss your knee injury and all non-surgical and surgical management options.

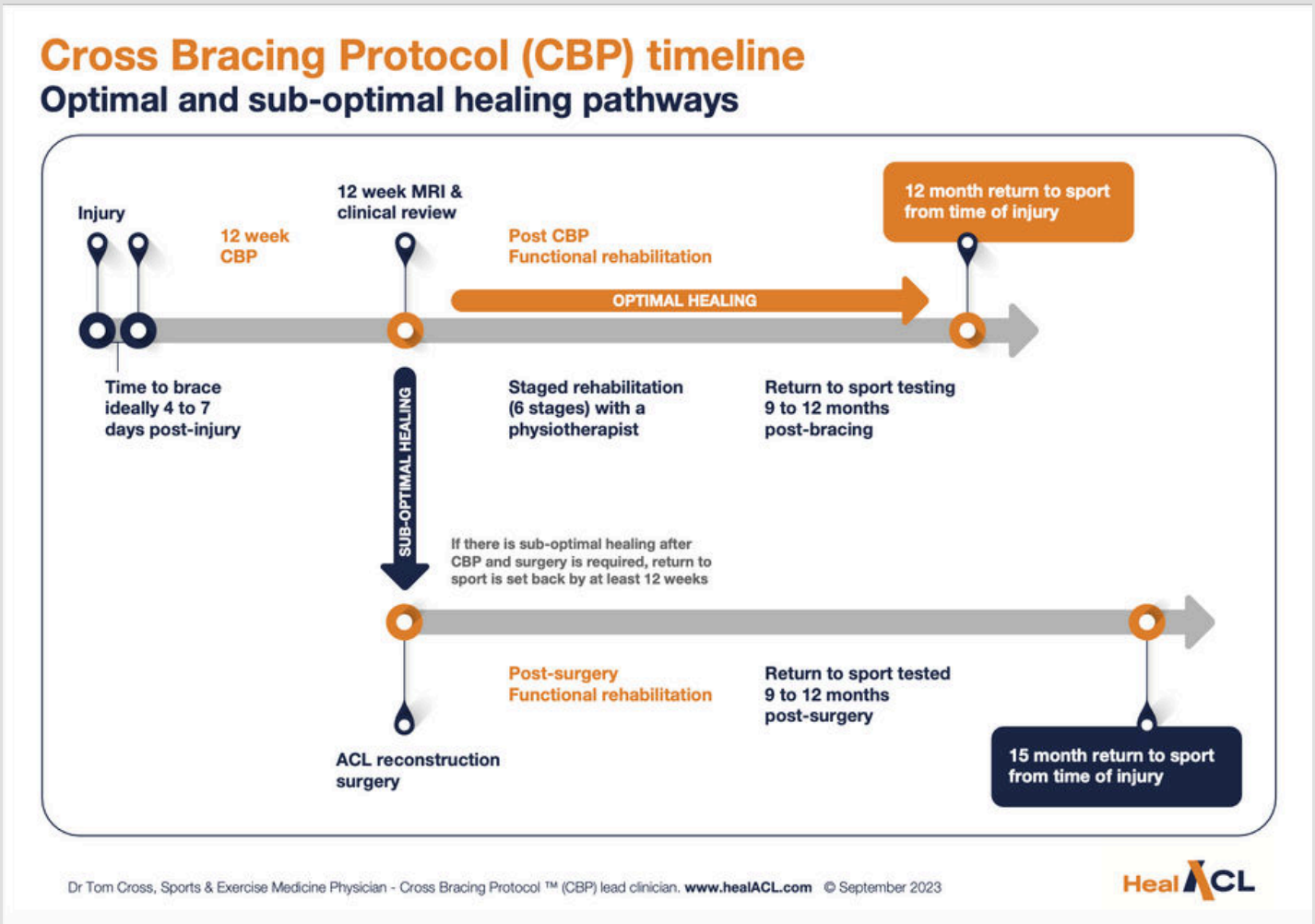
HOW DOES THE CBP HEAL MY ACL

The knee is immobilised in a brace that keeps it at 90 degrees of flexion, bringing the torn ends of the ACL closer together. This obeys the Orthopaedic principles of "Reduction and Immobilisation". During this period the ruptured "epi-ligamentous" tissues of the ACL initiate the healing process with a significant cellular response creating "bridging of collagen" in the ACL "rupture zone" that in turn will become the "healing zone" in the days,weeks and months ahead. The brace also helps stabilise the joint and reduces strain from weight-bearing or excessive movement, preventing further injury. The efficacy and safety of the CBP critically depends on proper patient selection and triage in the days after the ACL injury , adherence to the protocol, and careful monitoring and rehabilitation by Medical and Physical therapy professionals.



CBP Timeline.

The CBP has several bracing protocols all sharing the commonality of immobilising the knee at 90 degrees for 2, 3 or 4 weeks duration and then sequentially extending the knee in the weeks thereafter. The selection of which CBP is most appropriate is based on “patient factors” and “MRI factors,” which can be discussed with your healthcare professionals.



Whilst this timeline provides a foundation for the Cross Bracing Protocol, it is important to reinforce the importance of an ongoing commitment to rehabilitation to maximise the chances of achieving a strong, anatomically healed ligament that can effectively resist anterior tibial translation and protect the knee long-term.

CBP Considerations.

If you are considering the CBP, please consult with your healthcare professional to determine your eligibility for this treatment pathway. Below are some predictors of ACL healing with adoption of the CBP:

For additional information, please engage with the links below:

Cross Bracing Protocol Webinar
https://youtu.be/NxtxNvZcfI8

University of Melbourne Patient Decision Aid
https://www.aclinjurytreatment.com/weigh-up-pros- and-cons

HEAL ACL Information
HealACL.com

12 Week CBP.

- **Week 1** - **4** Brace Locked at 90 Degrees (Non-Weight Bearing)
- **Week 5** Brace Locked at 60-90 Degrees (Non-Weight Bearing)
- **Week 6** Brace Locked at 45-90 or 50-90 Degrees (Non-Weight Bearing)
- **Week 7** Brace Locked at 30-120 Degrees (Partial Weight-Bearing)
- **Week 8** Brace Locked at 20-120 Degrees (Partial Weight-Bearing)
- **Week 9** Brace Locked at 10-120 Degrees (Full Weight-Bearing)
- **Week 10** - **11** Unrestricted Brace (Full Weight-Bearing, Take the Brace Off to Sleep)
- **Week 12** Clinical Review with Doctor, 3-Month MRI, Brace Comes Off.
- **Week 16** - **17** Start Straight-Line Running.
- **Week 20** - **40** Re-Commence Regular Training and Continue Rehabilitation.
- **Week 40** - **52** Clinical Review with Doctor, 12-Month MRI, Return to Sport Testing, Return to high-demand ACL sports at 12-months.

8 Week CBP.

- **Week 1** - **3** Brace Locked at 90 Degrees (Non-Weight Bearing)
- **Week 4** Brace Locked at 60-90 Degrees (Non-Weight Bearing)
- **Week 5** Brace Locked at 45-90 or 50-90 Degrees (Non-Weight Bearing)
- **Week 6** Brace Locked at 30-90 Degrees (Partial Weight-Bearing)
- **Week 7** Brace Locked at 10-120 Degrees (Full Weight-Bearing)
- **Week 8** - **11** Unrestricted Brace (Full Weight-Bearing, Take the Brace Off to Sleep)
- **Week 12** Clinical Review with Doctor, 3-Month MRI, Brace Comes Off, Start Straight Line Running.
- **Week 14** Start Agility and Sprints.
- **Week 16** - **20** Re-Commence Regular Training and Continue Rehabilitation.
- **Week 20-40** Clinical Review with Doctor
- **Week 40** - **52** Clinical Review with Doctor, 12-Month MRI, Return to Sport Testing, Return to high-demand ACL sports at 12-months.

6 Week CBP.

- **Week 1** - **2** Brace Locked at 90 Degrees (Non-Weight Bearing)
- **Week 3** - **4** Brace Locked at 60-90 or 50-90 Degrees (Non-Weight Bearing)
- **Week 5** - **6** Brace Locked at 30-90 Degrees (Partial Weight-Bearing)
- **Week 7** - **11** Brace Comes Off (Full Weight-Bearing, Continue Rehabilitation).
- **Week 12** Clinical Review with Doctor, 3-Month MRI, Start Straight Line Running.
- **Week 13** Start Agility and Sprints.
- **Week 14** - **18** Re-Commence Regular Training and Continue Rehabilitation.
- **Week 19** Clinical Review with Doctor, Return to Sport Testing, Return to Sport.
- **Week 40** - **52** Clinical Review with Doctor, 12-Month MRI, Return to Sport Testing, Return to high-demand ACL sports at 12-months.

Modified Hybrid CBP.

Weeks 0 - **6** Brace Locked at 30-90 Degrees (Weight Bearing if Tolerated*)

**90 degree flexion of the knee maintained as much as possible in the critical first 2-weeks to facilitate ACL healing per medical instruction. For example, working from home in the first two weeks. All rehabilitation exercises from weeks 1-4 are performed at 90-degrees flexion "isometrically" to further protect the healing ACL from strain and movement.*

Week 7 - **12** Brace Comes Off (Weight-Bearing as Normal**)

*** Brace is off at home. No requirement to sleep in the brace. In dangerous environments where the patient may collide with humans and animals, or on unsteady terrain, wearing of the brace or a supportive knee sleeve is recommended to further protect the healing ACL.*

Week 12 Clinical Review with Doctor, 3-Month MRI.

Week 12 + Standardised staged ACL rehabilitation program specific to patient presentation.

At appropriate time Re-Commence Regular Training and Continue Rehabilitation.

At appropriate time Clinical Review with Doctor, Return to Sport Testing.

Week 40 - **52** Clinical Review with Doctor, 12-Month MRI. Return to high-demand ACL sports at 12-months.

Advantages of CBP.

- **Supports Potential Restoration of ‘Normal’ Anatomy of the Native ACL:** Retains the ACL's original femoral origin and tibial insertion, native blood and nerve supply. It is hypothesised that the disorganised collagen seen in initial ligament injuries remodels and reorganises over the subsequent months and years which may potentially improve ACL tensile strength and survivorship. ACL Healing outcomes may vary based on most importantly the initial severity/classification of the ACL, patient genetics, physiotherapy quality, nutrition, medications used by the patient and lifestyle factors like smoking, alcohol, or illicit drug use.
- **Lowers Financial Costs:** CBP + rehabilitation is much less expensive than ACL surgery.
- **Avoids Graft/Donor Site Morbidity:** Eliminates the risks of complications from autographs: hamstring grafts (e.g., weakness, pain, muscle dysfunction, loss of power, and speed) and patella tendon grafts (e.g., anterior knee pain and discomfort with kneeling).
- **Safer for Paediatric Patients:** Avoids potential growth plate injuries associated with ACL surgery in skeletally immature individuals, a risk that is unfortunately higher in younger children and decreases with age.
- **Preserves Future Options for Surgery:** Potentially allows for delayed ACL reconstructive (ACLR) surgery.
- **Reduces Risks Associated with ACL Surgery:** Avoids post-surgical pain, infection, bleeding, DVT, anaesthetic complications, and surgical scarring.
- **Minimises Pain and Discomfort:** Results in significantly less pain compared to ACL surgery, especially during the first 2-3 weeks post-treatment.

Disadvantages of CBP.

- **Inconvenience of Bracing:** Requires wearing a brace for 6, 8, or 12 weeks, with the first 4–6 weeks being particularly challenging.
- **Non-Weight-Bearing Period:** Involves using crutches for the first 4-8 weeks dependent on which particular CBP protocol is prescribed and adopted. Mobility aids such as iScooters, iWalkers, Wheelchairs and small electronic 4WD vehicles are highly recommended to reduce crutch dependency and improve mobility.
- **Inability to Drive:** Driving may not be possible during the bracing period if the right knee is affected.
- **Risk of Deep Vein Thrombosis (DVT):** Managed by anticoagulation medication (e.g., Xarelto 10mg daily for 8 weeks), calf pump exercises, hydration, elevation of the affected limb, and compression garments or stockings.
- **Risk of Sub-Optimal Healing or Non-Healing:** Includes reduced thickness/volume healing, elongated healing (sag), non-contiguous healing, or healing in an incorrect position (e.g., to the lateral wall or PCL). The risk is hypothesised to correlate with the acute MRI classification of injury, and is discussed with patients during initial consultation.
- **Skin Irritation from the Brace:** Prolonged brace use may cause discomfort/irritation.
- **Muscle Atrophy:** Prolonged immobilisation can lead to muscle loss, mitigated through isometric exercises, weekly physiotherapy, muscle stimulation, a high-protein diet, collagen supplementation, and referral to a sports dietitian or naturopath.
- **Knee Joint Stiffness/Arthrofibrosis:** Immobilisation may cause stiffness or arthrofibrosis, but this can be mitigated with meticulous physiotherapy and is reversible post-bracing through active and passive strategies.
- **Delayed Return to Sport:** If the ACL heals poorly or fails to heal, crossing over to ACL surgery may result in an additional 3-month delay in returning to sport.
- **Limited Long-Term Data:** Currently, there is insufficient 5–10-year follow-up data on re-rupture rates compared to ACL surgery grafts.

Please Note: If you choose to adopt the CBP and you have one or more further episodes of knee instability, you risk suffering more injuries to your knee in particular injury to your menisci (knee cartilages) and your articular joint surfaces. This risk is one of the main reasons some patients choose to stabilise their knee early with ACL reconstructive surgery. The risk of further knee instability and concomitant knee injuries is meticulously mitigated by you working closely with your physiotherapist both during the CBP and the weeks and months of rehabilitation afterwards. The risk of significant damage to the knee often occurs with activities that involve running fast whilst pivoting at speed, jumping high/landing from a height, and skiing fast. Your treating physiotherapist and your treating doctor will advise you when they believe you are ready to return to such activities, and will advise if they believe these activities carry a significant risk for you personally based on the healing outcome of your ACL. If the risk is considered too high, you will have a choice to choose ACL reconstructive surgery, or choose to adapt and participate in less demanding ACL sports and exercise activities.

Informed Consent.

If you decide to go ahead with treatment in consultation with your healthcare professional, you will be asked to review and sign an informed consent document with additional information ensuring that you are fully informed of the risks vs benefits of this treatment specific to yor case.

Protocols.

If you make the choice to commence the CBP, you will be given an additional document that outlines the chosen protocol ie. 12 weeks, 8 weeks, 6 weeks or Modified Hybrid CBP, that outlines the brace ROM and criteria for progression, aims, physiotherapy treatment, standard exercises, advanced exercises, and options for functional and cardio activities. Adherence to the protocol adopted optimises the chances of success.

Nutrition.

During your ACL injury recovery, you may consider consulting with a dietitian for specific nutritional advice. Generally, prioritising a balanced diet that meets your energy requirements and focussing on quality protein intake spread throughout the day, is crucial for supporting recovery from ACL injuries, whether through the CBP, surgery, or rehabilitation alone. Staying hydrated, eating a variety of whole foods, and considering supplementation if appropriate may aid in alleviating symptoms across the first few weeks.

Timeline for Nutritional Requirements:

- **Week 0-4:** Address potential cramping through hydration and magnesium supplementation (250-350mg / day if cramping until symptoms are alleviated). Please note that Magnesium supplementation products are required to be batch tested for any WADA tested athletes.
- **Week 0-6:** Avoid inflammatory foods, including excessive alcohol, tobacco, and processed foods.
- **Week 0-12:** Optimise protein intake and distribution throughout the day to prevent muscle wastage (about 0.4 grams per kg per meal or total daily protein intake aiming for 112-160 grams for a 60-90kg person relatively).
- **Week 4-12 & Beyond:** Consider collagen supplementation (take 10-20grams of hydrolysed collagen with vitamin C, 40-60 minutes prior to any rehab session, for example take 30-60 minutes before physiotherapy in the first 4 weeks of CBP and before every rehabilitation session or exercise from then on. It does not replace your protein requirements for post rehab/exercise or from food).
- **Week 12+:** Consult a sports dietitian for personalised guidance on return to sport and optimal rehabilitation nutrition.

Helpful Links:

- To find a local sports dietitian - www.sportsdietitiansaustralia.com.au
- To find out more about collagen supplementation - https://www.ais.gov.au/nutrition/supplements/group_b#collagen_support

Nutrition.

Sample meal plan created by accredited sports dietitian, Peta Carige, for patients with weight between 80-100kg. For an individual plan, please visit www.petacarige.com.

Breakfast	 	Oats with 350mL skim milk, 300g Greek yogurt, 2 eggs (32-40g protein)
Lunch		Homemade burger with 112-130g chicken breast (32-40g protein)
Snack	 	2 tins of tuna on crackers with 1/4-1/2 cup almonds (32-40g protein)
Dinner		115-130g steak with vegetables (36-41g protein)

The above plan is an example of quality nutrition with a good spread of protein across the day. This is not a prescriptive meal plan. Please see an accredited sports dietitian for a personalised plan.

Troubleshooting.

Oscar Jungstedt (Patient #164) at Splendour in the Grass Festival 2024

ISSUE 1 - MANAGING CRUTCHES

Ensure your crutches are correctly fitted by a physiotherapist. Canadian crutches (elbow) are generally preferred, but underarm crutches may suit those with less upper body strength or confidence. Navigating stairs can be tricky, so practice under supervision. When going upstairs, lead with your non-injured leg, followed by the crutches; when descending, the crutches go first, then your non-injured leg. Prolonged crutch use may cause wrist and shoulder pain; consult your physiotherapist for treatment, taping, or adding padded handles. Be cautious in wet, icy, or snowy conditions to prevent slipping; spikes can be added to the crutches for better grip.

ISSUE 2 - MOBILITY AID OPTIONS

Mobility aids like the iScooter and iWalker can be used from day one of the Cross Bracing Protocol without compromising ACL healing and may even aid recovery by applying posterior drawer force to the tibia. These aids may require a few days to weeks of practice to use comfortably, particularly after an acute knee injury. Many patients have found the 'Kneerover' scooter or other aids like wheelchairs useful and easily accessible online. Always consult your doctor or physiotherapist before choosing a mobility aid.

ISSUE 3 - MINIMISING FALLS RISK

Exercise caution when using crutches on wet, icy, or poorly lit surfaces, and avoid crowded areas to prevent being bumped. Limit alcohol consumption during the first eight weeks of the protocol, as the anti-coagulant Xarelto increases the risk of significant bleeding after a fall. Be especially careful during weeks 9-12, as the knee remains stiff and weak; keep the brace on for support, wear well-fitted shoes with good grip, and use extra care in the bathroom or shower to avoid slips.

Troubleshooting.

ISSUE 4 - SLEEPING

Finding a comfortable position to sleep in a brace is important. Popular positions include lying on your back with pillows under your knees, on your side with a pillow between your knees, or on your stomach with pillows under your shin. Ensure your foot and knee are aligned to avoid pressure on the shin, and experiment to find what works best for you. To address hamstring and calf cramping, massage the muscles, maintain the knee's prescribed flexion angle, and consider taking magnesium supplements. Consult your doctor if cramping persists.

ISSUE 5 - BATHING

Keep the knee at the specified angle during the Cross Bracing Protocol to avoid extending it beyond its range, which can undo healing. You can shower with the brace on by covering it to protect it from water or remove it while sitting on a plastic stool, ensuring the knee remains at the correct angle. After bathing, thoroughly dry the brace, as a damp brace can increase skin damage risk. Consider using a safe and functional shower stool, such as those available at Bunnings, to reduce the risk of slipping.

ISSUE 6 - SKIN PROTECTION

To avoid skin damage, ensure the brace is properly fitted and adjusted regularly. A knee sleeve, compression socks, or athletic garments can help protect the skin and improve circulation while ensuring the brace does not shift. If discomfort occurs, discuss options like Poron foam with your physiotherapist. After bathing, dry the brace to reduce the risk of skin irritation. Adjust brace straps to distribute weight evenly and consult your physiotherapist to ensure proper application.

Charlotte Burrell (Patient #343) completing rehab associated with the Cross Bracing Protocol

Troubleshooting.

Kara Simmons (Patient #905) playing croquet at home with an iWalk

ISSUE 7 - MUSCLE WASTING

Muscle wasting begins within days, but isometric exercises, collagen supplementation, and a high-protein diet can mitigate it. Exercises for the injured and uninjured leg, like wall squats, can promote muscle retention through neural pathways. While some muscle loss is expected, it is often recoverable within 12-16 weeks.

ISSUE 8 - MUSCLE CRAMPS

Muscle cramps can occur when muscles are in shortened positions within the brace. Stay hydrated and avoid straightening the knee to alleviate hamstring cramps, as this could hinder ACL healing. Calf cramps can be stretched and treated with massage. Magnesium supplements may also reduce cramping, and further guidance can be found in the CBP Nutritional Guidelines.

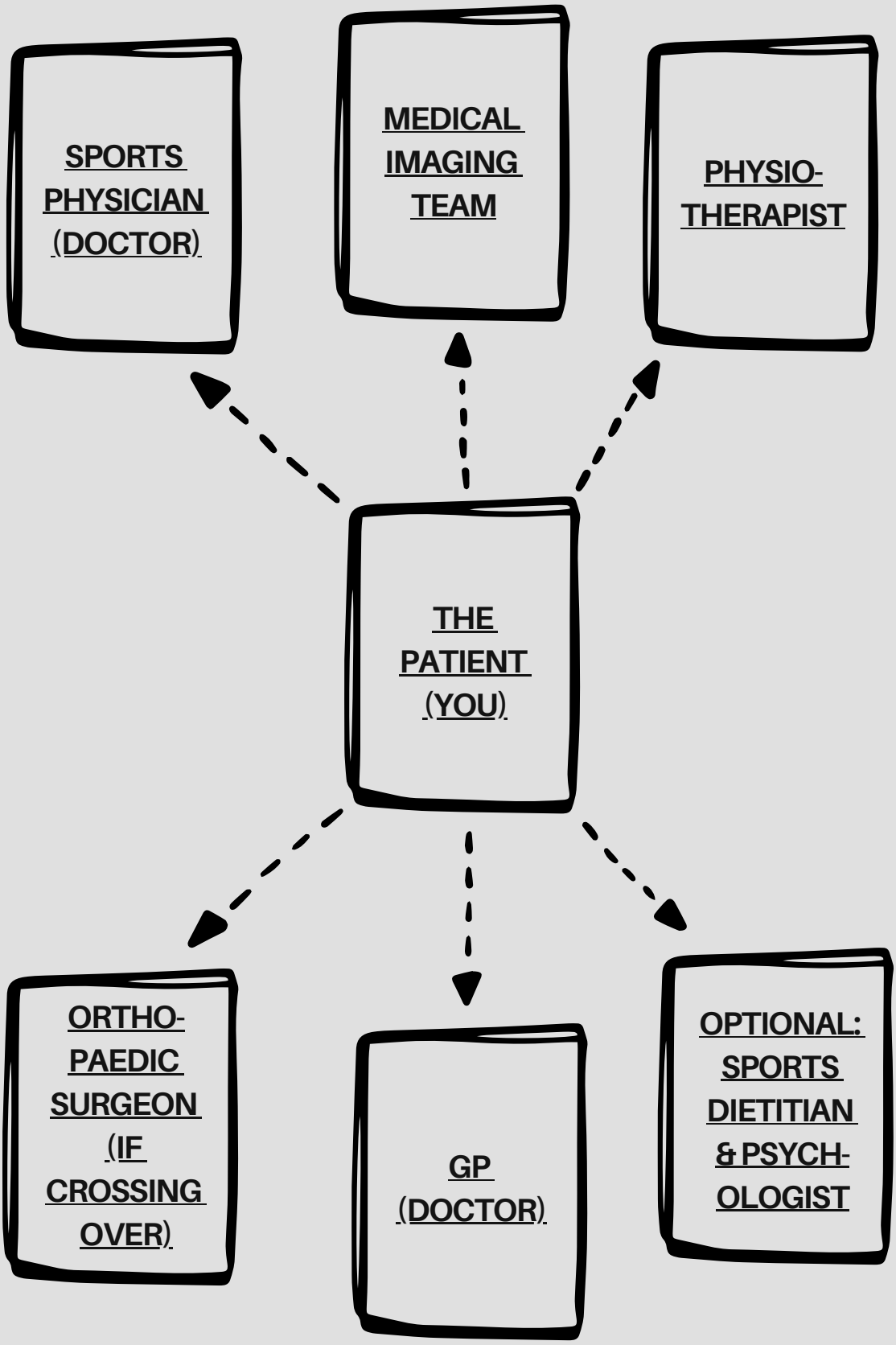
ISSUE 9 - MINIMISING THE RISK OF DVT

To reduce the risk of deep vein thrombosis (DVT), take prescribed anti-clotting medication such as Xarelto 10mg, perform exercises like calf pumps to improve circulation, and wear medical-grade compression socks or garments during the day. Side effects like fatigue, dizziness, easier bruising, or rare skin rashes can occur when taking Xarelto but by taking the medication at night these are minimised. Be aware of DVT symptoms like calf pain, swelling, or color changes, and seek immediate medical attention if they occur. Adopting these strategies has successfully prevented DVT in CBP patients.

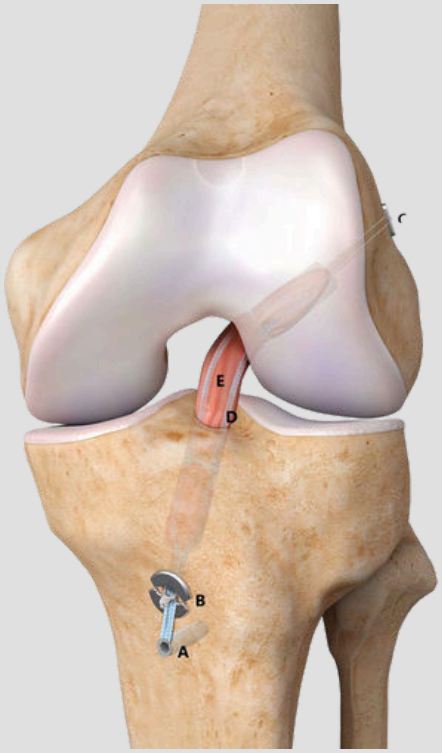
ISSUE 10 - BRACE FREE TIME

During the first four weeks, 'brace-free time is possible in a safe, seated environment with the knee at 90 degrees. Use this time for massage, moisturisation, and circulation improvement, ensuring the knee remains at the correct angle.

Your Team.


SPORTS PHYSICIAN (DOCTOR)
MEDICAL IMAGING TEAM
PHYSIO-THERAPIST
THE PATIENT (YOU)
ORTHO-PAEDIC SURGEON (IF CROSSING OVER)
GP (DOCTOR)
OPTIONAL: SPORTS DIETITIAN & PSYCH-OLOGIST

If it doesn't work.

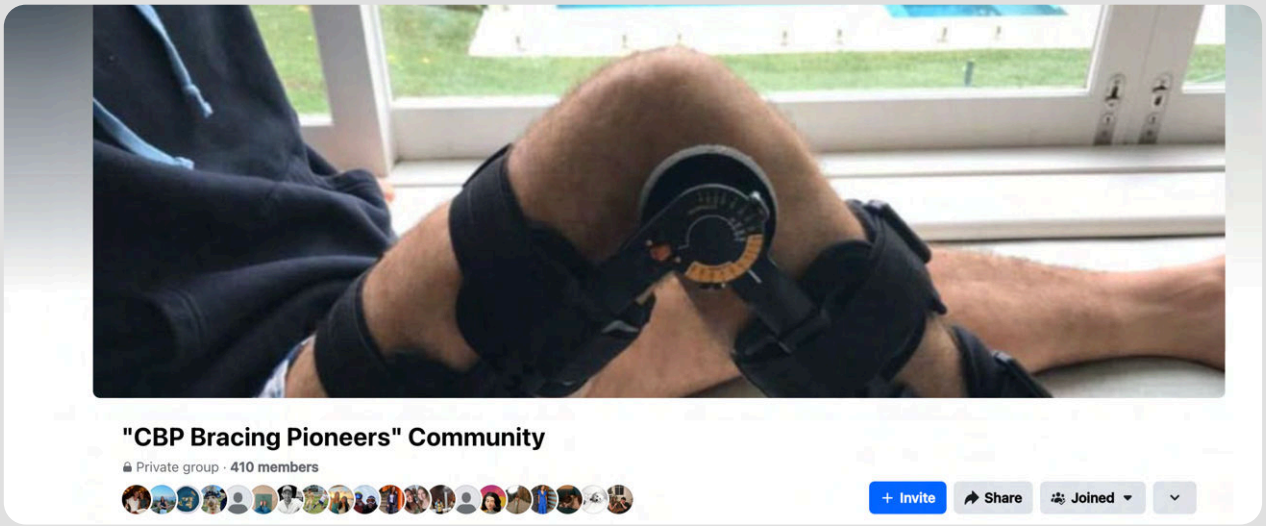


At your 3-month clinical review, an MRI will assess your ACL's healing progress using an ACLOAS rating. If the ACL is not healing as expected on MRI, and your physical examination demonstrates significant knee laxity, your care team may recommend transitioning to surgery, commonly referred to as 'crossing over.' This decision ensures the best chance of restoring knee stability and preventing long-term complications.

Similarly, after 12-months when patients commence return to sport activities there is a risk of re-rupturing the ACL, especially in high-demand ACL activities and sports. Of over 700 patients that are 1-11 years post CBP management of their ACL injury, the re-rupture rate for these patients is 15%. The majority of these patients 'cross over' to ACL reconstructive (ACLR) surgery. The CBP research team are watching this metric of ACL survivorship extremely closely to advise and inform patients and clinicians.

Diagram of the anterior cruciate ligament (ACL) reconstruction (ACLR) construct with suture augmentation (SA). Bodendorfer, et al. (2019). Suture Augmented Versus Standard Anterior Cruciate Ligament Reconstruction: A Matched Comparative Analysis. Arthroscopy The Journal of Arthroscopic and Related Surgery. 10.1016/j.arthro.2019.01.054.

Support.



Alongside your amazing healthcare team, you will be able to join the growing online community for patients (the Facebook "CBP Bracing Pioneers" community) who have undergone the CBP treatment pathway to ask any questions you may have.

Patient Experiences.

KEILEY MEAD

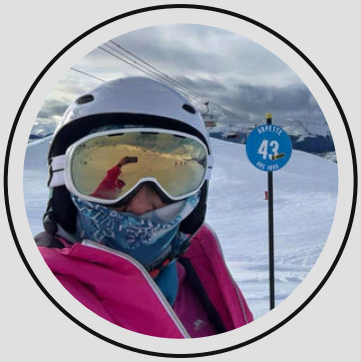
AFLW

I was patient #108 in the Cross Bracing Protocol. After seeing so many girls around me do their ACL at games or training, I felt it was only a matter of time before it was my turn and of course, one wrong step into a pothole walking to training and my ACL was done for in January of 2021, aged 20. I had already been booked in to see a surgeon before my teammate suggested I go speak to Dr Tom Cross. He explained the protocol to me and I was convinced! I cancelled my surgery that day and went into a brace. 3 months later and my ACL had reattached - absolutely amazing! Another few months into 2021 and I managed to run the Sutho 2 Surf, I hiked around New Zealand, and went back to AFL - so despite the rocky start to the year, the CBP was the best decision I made! It is a tough protocol but I could not recommend it higher to anyone that asks!

STEVEN DUHIG

OZTAG

I was patient #56 in the Cross Bracing Protocol. In 2021, aged 37, I sustained the knee injury that frightens every athlete. I hoped for the best possible outcome, however, after looking at my scans the physio associated with my team broke the news that I had torn my ACL. I wasn't presented with any other treatment options and was made to believe that surgery was the only way I'd be able to return to playing any type of sport. I wanted to avoid surgery if possible and I was very relieved to learn that there was a viable alternative after speaking with my physio about a new bracing protocol with Dr Tom Cross. As tough as the experience was, with support from Tom and the team I managed to stay positive throughout as I knew I was a part of something revolutionary in the sport and rehabilitation world. When the 12 weeks were up, my final MRI showed that the treatment had worked and that my ACL had completely healed. The relief and happiness I felt when Tom told me that it had been successful was indescribable. As an exercise scientist and coach, this experience has been pivotal. It has proved that there is an alternative to surgery and I would recommend anyone who sustains an ACL injury to research and explore all available treatment methods, and if eligible for the bracing protocol, to highly consider it.

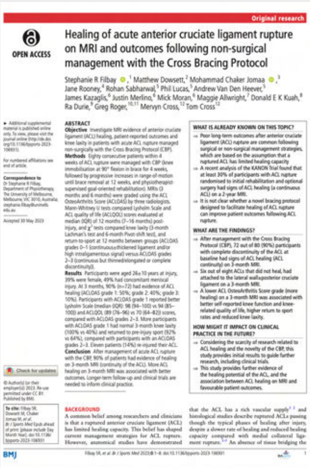


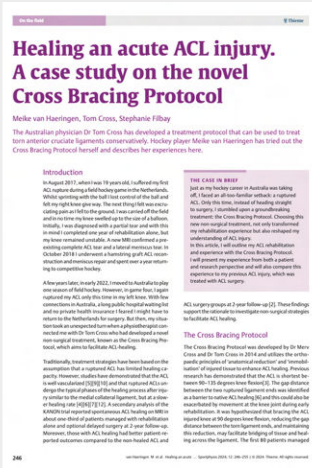
EKATERINA ELLIOTT

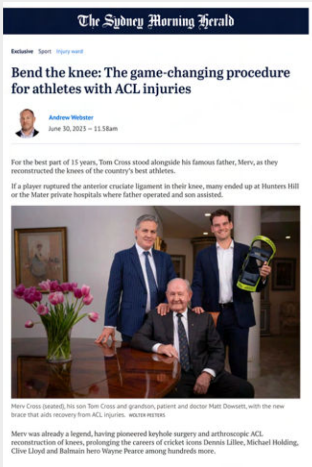
SKIING

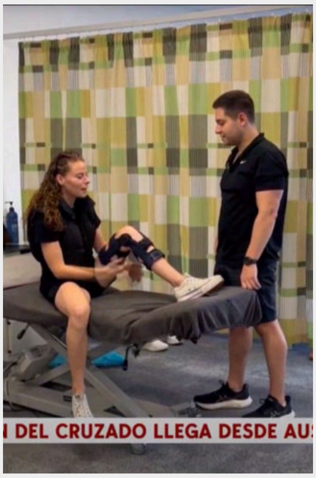
I was patient #768 in the Cross Bracing Protocol. It was a clear day on the slopes of Cardrona, New Zealand, and on day 4 of my 8 day skiing adventure, I caught an awkward groove in the moguls, heard a gut wrenching loud pop, and stacked it. The physio at the mountain progressively became less smiley, the more he examined me and an MRI later confirmed our fears - an ACL tear. After marinating in all my options, I decided trying this new protocol was my best option. To anyone who has injured their ACL and is a good candidate for the protocol, do it. Dr Cross and his team are diligent, compassionate, kind and wonderful people who truly care about providing you (and the world) the best possible way to heal an ACL. They deserve tremendous recognition for the number of lives they've improved, money saved on surgery, and their ambitious and devoted drive.

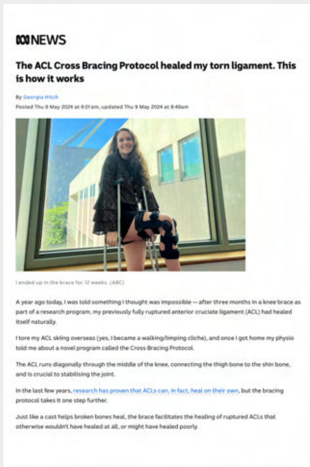
Major Publications and Media.











Acknowledgements.

We acknowledge the Traditional Owners of the lands on which this booklet was created, the Gadigal People of the Eora Nation, and we pay our respects to Aboriginal and Torres Strait Islander Elders past, present and emerging.

This booklet was developed to support patients in understanding their care, and we would like to express our gratitude to those who contributed to its creation.

A special thank you to the author of this document, Keiley Mead from the University of Sydney for compiling and writing this resource, ensuring that complex medical information is presented in a clear and accessible way for patients considering the Cross Bracing Protocol (CBP).

Additionally, we thank the amazing team of reviewers of this document including but not limited to Dr Matt Dowsett, Meike van Haeringen, and Peta Carige.

We acknowledge Dr. Tom Cross, whose dedication and expertise led to the development of the protocol described in this booklet. His commitment to advancing patient care has already made a significant impact on the lives of so many patients, and we acknowledge his support reviewing this information booklet to ensure medical accuracy.

We extend our sincere appreciation to the Stadium Clinic team in Sydney, Australia for their support in the production and distribution of this booklet. In particular, the Stadium Physiotherapy team who have managed over 700 CBP patients. Their ongoing dedication to patient education and well-being has been invaluable.

Finally, we would also like to thank the patients who have accepted this treatment and shared their experiences. Your trust and willingness to embrace new medical approaches contribute to the ongoing improvement of patient care.

Images of some of the amazing patients who have opted into the Cross Bracing Protocol for their respective injuries. From left to right is Allegra Coppleson (Patient #900), Raffy Alas (Patient #155), and Judith Blankfield (Patient #932).

CBPA Cross Bracing Protocol

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THE UNIVERSITY OF SYDNEY

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All information in this publication is correct as at April 2025.

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